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**Innovation at the Bottom of the Economic Pyramid:
a bibliometric exercise**

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Relatório do Projecto ou Dissertação

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You have to want it more than you are afraid of it

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Abstract

Over the last decade, there has been an increased interest in the ‘Base of the Pyramid’ (BOP) concept relating it to innovation and the importance of its role in stimulating economic growth which is considered as one of the most important means for poverty reduction.

The major purpose of this thesis is twofold: i) to review the existing literature on BOP and ii) to analyze in depth diverse research pertaining to the role of innovation and entrepreneurship in finding opportunities in the BOP markets as a way to stimulate economic growth within these poor communities.

A first approach to the related literature allowed the identification of the BOP markets in many areas around the world, and the opportunities of innovation that these markets might offer. These findings provided the necessary framework for the second part of this dissertation: the implementation of a bibliometric exercise to construct the mapping of this literature. This exercise offers a quantitative perspective of the literature in several dimensions: main publications, main authors in the field, emerging topics and methodologies. Based on this bibliometric procedure, we systematized the main contributions of this literature, by signaling the most relevant opportunities in BOP markets. We also contribute with a deeper understanding of the evolution of the BOP innovation through time, using the selected articles to discuss the existing findings in literature and identify the gaps that still exist, also highlighting the most effective and innovative approaches at the BOP.

Keywords:

Base of the Pyramid (BOP), BOP Innovation, BOP market, Poverty alleviation, entrepreneurship, Bibliometrics.

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1 Introduction

The literature on the Bottom Of the Pyramid (henceforth referred to as BOP) has been focusing on themes such as (1) the nature of BOP markets, their size and their characteristics; (2) the opportunities the BOP markets offer; (3) Principles of BOP innovation (4) and examples of successful or/and non-successful BOP innovations. Most of the findings from these researches about BOP, conceptual or founded on case studies, are inconclusive due to the complexity and heterogeneity of BOP markets.

One of the most important topics discussed in this literature is the size of BOP markets. Prahalad and Hammond (2002) and Hart and Prahalad (2002) sustain that the size of these markets seems to be large and that many investments within these markets can be done. However, this is not a consensual argument within the literature. For example, Karnani (2007) claims that there is an over-estimation of the BOP markets size. According to this author, these markets are small and not profitable.

Another issue that is frequently addressed in the literature concerns the opportunities within these markets and whether they are important or not. Some researchers like Prahalad (2004) argue that BOP markets provide great opportunities for business, especially for multinational corporations (henceforth referred to as MNCs). London and Hart (2004) claim that BOP markets offer opportunities more than the “Top of the Pyramid” (henceforth referred to as TOP) markets that are becoming more and more saturated. In contrast, Karnani (2007) argues that although there are some good opportunities at the BOP markets, most of them are not that outstanding for MNCs. The author states that the only way to help the impoverished is to see them just as producers and not as customers because of their discouraging conditions. According to this author, focusing on the poor as producers is much more interesting than just considering them as consumers since what they really need is jobs, not additional goods. Seeing them as producers would lead to increase their real income and could be a way to alleviate poverty.

Since these early studies, there has been a progress in the literature relating the BOP concept with innovation and entrepreneurship, emphasizing their role on finding great opportunities within the BOPs and highlighting their contribution to create value in these markets. The role of innovation in creating social change within the BOP has attracted attention of many researchers like Anderson and Markides (2007) who consider that the key successful dimensions to address the BOP economic needs are innovation and the balance of the four A's: affordability, availability, acceptability and awareness.

Some other researchers on the BOP issue have discussed the principles of innovation at BOP markets (e.g., Prahalad, 2004) which are different from those at the TOP or at the Middle of the Pyramid (henceforth referred to as MOP), mostly interested in the ability of the BOP innovation tackling global poverty. However, due to the complexity and heterogeneity of these markets, most research findings have been inconclusive. Moreover, it is crucial that the related literature aims at identifying the main challenges and opportunities that exist in poor communities and assess the potential contribution of innovation in both serving BOP customers and improving their standards of living. An important issue that also seems to be missing from this literature concerns about differences between the different markets across countries in term of regions , composition, types, main sectors and potential. To the best of our knowledge, there is not yet a mapping of key recent publications and authors associated with the BOP innovation concept. Hence, it seems quite relevant to implement a comprehensive and quantitative account of this literature. Based on a bibliometric methodology, we aim at mapping this literature, not only by main publications and authors, but also by analyzing the topics that have been emerging within this research field and accounting for the most relevant methodologies.

This qualitative and quantitative review will contribute to signal opportunities in BOP markets through innovation and better understand the evolution of the BOP innovation in the last years.

The outline of this dissertation is as follows. After the Introduction, Section 2 presents a review of the relevant literature on the two relevant fields of research: innovation and BOP, explaining the most important concepts and theories revolving around this research field. Section 3 includes methodological considerations, explaining how the research of this dissertation was conducted (Subsection 3.1), and discusses main results (Subsection 3.2). Section 4 concludes, offering a sum up of main findings and limitations, and presenting suggestions for future research.

2 Innovation and the Bottom of the Economic Pyramid: a literature review

2.1. The BOP concept

2.1.1. Defining and visualizing the BOP

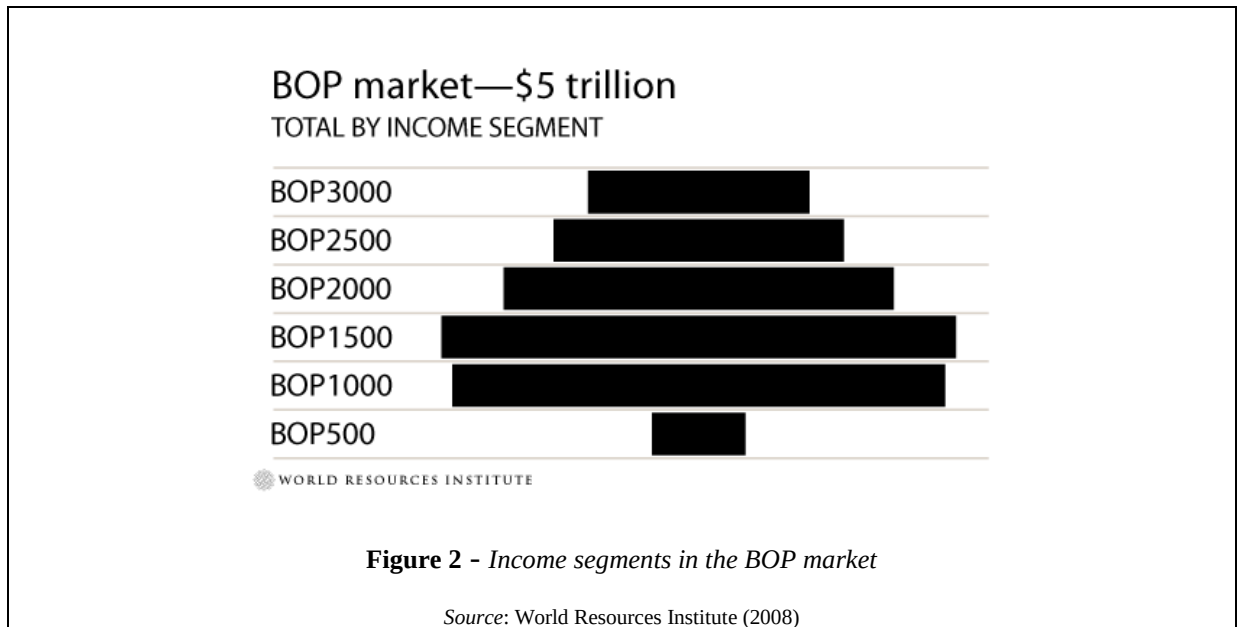
The term “Bottom of the Pyramid” (BOP), also known as the ‘Base of the Pyramid’, was defined by Prahalad and Hart as the billions of people living on less than \$2 per day (Prahalad and Hart, 2002). This population represents the largest and poorest socio-economic group in the economic chain and does not only lack the availability to basic facilities like access to water, food and healthcare but also to general consideration and attention on the global stage (Prahalad and Hart, 2002). The concept of BOP is a core element of the related research: many estimations based on the BOP as the biggest and poorest segment, put the demand of its customers at PPP\$5 trillion, making it a big market full of opportunities for innovative businesses throughout the world.



Figure 1 - Purchasing Power Parity (PPP) TOP and BOP markets

Source: World Resources Institute (2008)

We can also see the global BOP market as a pyramid composed by many segments based on the annual income per person per year. Each segment corresponds to the number of people earning that annual income. These different segments are described in the figure below.



The highest percentages of the people belonging to the bottom of the economic pyramid are concentrated in, South Africa, Eastern Europe, Latin America, and South Asia (Subrahmanyam and Gomez-Arias, 2008). Therefore, the focus of the literature is on these specific regions.

Examining the global BOP market, we can see that there are some regional variations within this huge market in term of type. The rural markets are mostly concentrated in Asia and Africa while the urban ones are more concentrated in Latin America and Eastern Europe.

2.1.2. BOP market per sectors

The largest sector in the BOP market is the food sector with the highest consumer expenditure. It has a value of \$ 2.89 trillion. The food market may offer some good opportunities not only by improving the food quality for low priced goods but also by improving the availability of these goods. The energy sector is also important with a consumer expenditure of \$ 433 billion. As the rent represents a big part of a costumer expenditure, the housing sector constitutes one of the biggest markets in the BOP with an estimated value of consumer expenditure of \$ 332 billion. The value of personal transportation is estimated at \$ 179 billion and \$ 158 billion for health market. The smallest sectors in the BOP market are the ICT sector and the water sector with respectively values of consumer expenditure of \$ 51 billion and \$ 20 billion. For the ICT market, there is an increasing demand for ICT services and goods at the BOP. As for the water sector, most of

the markets are rural and there are many areas that still suffer from polluted water sources that is why the demand for clean water is increasing since the solutions adopted for purifying the water need to be improved.

2.1.3. BOP markets' characteristics and challenges

One of the most important characteristics of the BOP market is its big size, it is estimated as mentioned before as no less than 4 billion people. Despite this large size, this market suffers from a lack of a variety of goods (Prahalad and Hart, 2002).

The BOP literature agrees that there is not only a limited research but also a lack of well-defined solutions of how MNCs can adapt innovative strategies for the BOP markets (Govindarajan and Ramamurti, 2011). Therefore, many scholars suggest that MNCs have to understand the low-income users' needs and the characteristics of BOP markets in order to implement innovative business models that could be successful at the BOP, meeting the needs of their customers and improving their living conditions while using innovation. A less competitive environment also characterizes the BOP markets. The MOP markets and the TOP markets are more and more saturated and do not offer the same opportunities for fast growth like they used to (Hart, 2007).

Doing business in the BOP markets does not only offer great business opportunities for MNCs but also creates mutual learning experiences and knowledge-exchange (Prahalad and Hart, 2002). However, culture, conditions, contexts, and societal structures of the BOP markets are unique therefore; they might be extremely different from what MNCs are familiar with. Moreover, the environment of the low-income markets is different and more challenging compared to the other markets due to their heterogeneity and specific nature characterized by many constraints mainly economic, social, and financial ones. The heterogeneity of BOP markets implies that the awareness of marketing strategies suitable for these markets is a crucial element to reach BOP customers. In addition, the presence of different languages and dialects limits the promotion techniques and represents a big challenge for all the businesses that want to serve low-income consumers in both developing and developed countries. That is why innovation is necessary to help these markets to develop goods, services, and policies that correspond to those constraints.

Some authors and scholars such as Arnold and Williams suggest that the companies targeting BOP customers should integrate environmental sustainability criteria into their business policies to achieve the desired outcome from the efforts of these people (Arnold and Williams, 2012). Some other state that the attractiveness for the BOP market is only seen by

companies who are stressed either by non-governmental organizations or by their governments and/ or want to gain a good reputation. (Ramani and Mukherjee, 2014).

Dealing with the BOP market requires an understanding of the big challenges that this market presents like the weak and limited purchasing power of its customers and the diversity of habits, cultures, and tastes in the different regions. Therefore, it is crucial for companies targeting these markets to analyze the customers they are dealing with. Many studies have explored the customer behavior in the BOP in order to improve some strategies to target these customers and develop new ones. These studies have demonstrated that the main problem for these customers is illiteracy so the best way to describe the benefits of a given good or service relies on providing pictorial information (Rosa and Viswanathan, 2005). Brand was also seen as a very important factor that can affect the purchase decision of these customers. Many experiments have shown that poor people are more attracted to branded goods more than the other goods: with purchasing the branded goods, they feel like they belong to the society and that they are not excluded (Van Kempen, 2004).

2.2. BOP as a source of innovation

2.2.1. Definition of BOP innovation

To define BOP innovation, researchers have taken into consideration many factors, some specific criteria, and most importantly the characteristics of the BOP markets that are mentioned above and that are different from other markets. Some scholars focus on this concept by analyzing its capability and contribution in poverty alleviation.

Innovation has always been perceived as a typical “first world” activity (Fagerberg et al., 2010). Such innovation is generally carried out in big companies where there is a favorable environment that can foster creativity and the invention or the improvement of new products and processes and where the exploitation of advanced and recent knowledge is required. However, innovation is also seen from another different perspective that goes beyond the typical description mentioned above: Innovation could be adopted and applied in low communities and limited-resource environments (Prahalad, 2004). Baker and Nelson (2005) define limited-resource environments as the environments that present new challenges without offering any new additional resources.

When discussing BOP innovation, many terms are used to address innovations that create or improve opportunities to make the BOP communities have better life conditions.

A special attention has been given to Resource Constrained Innovation (henceforth referred to as RCI) at the BOP. This concept and other similar concepts with allied meanings have gained a big interest in the academic literature. Among these concepts we cite ‘frugal innovation’

(‘Gandhian’ or ‘Jugaad’ in Indian) whose goal is not only lowering the cost of a good but also making it available at a large scale by minimizing the use of resources and transforming the financial constraints or institutional constraints into an advantage (Bound and Thornton, 2012), ‘reverse innovation’ which refers to the innovation whose emergence occurs in developing nations first before spreading to the developing ones and whose process starts with focusing on the requirements to develop low-cost products in developing countries and then sell them elsewhere with low prices creating new markets (Govindarajan and Trimble, 2012), ‘inclusive innovation’ which refers to any innovation leading to affordable access of quality goods and services for low-income communities (George et al., 2012) and ‘BOP innovation’ which is the innovation that could be adopted within the BOP communities targeting the communities trapped in the cycle of poverty and terrible life conditions (Prahalad, 2004). All of the innovations mentioned above are characterized by the lack of financial, material and human resources, are working towards a common goal mainly poverty alleviation and are classified under RCI. The main focus in the literature has been on understanding how innovation could be conducted or achieved with the existence of such constraints that represent an obstacle for doing business at the BOP.

2.2.2. Key factors of successful BOP innovations

a. Awareness of the customers’ needs

The literature reveals that having a solid understanding of the BOP markets’ customers’ needs, is one of the most important factors for the success of adopting innovation at the BOP.

Considering Maslow's hierarchy of needs, basic or physiological needs are the ones that should be met first and whose satisfaction would be valued the most (Maslow, 1943). According to Maslow these needs should be met in a hierarchical manner:

- i. Physiological
- ii. Safety and security;
- iii. Belonging;
- iv. Self-esteem; and
- v. Finally self-actualization

The individuals that belong to these low communities have complex financial lives. They are always obliged to make tough buying decisions and are torn between meeting their basic needs and managing risk by saving cash for any kind of unexpected circumstances. Hence, their choices and needs are different from consumers living in rich markets.

Subrahmanyan and Gomez-Arias classified the consumption areas into 4 categories: the first one is the basic needs such as food which has the most expenditure, water, sanitation,

housing, and energy. The second one includes is the fundamental services that provide safety for these consumers such as health services, insurance services, education and transportation. The third category includes services and goods that help them in keeping up with society and interacting with the world such as information and communications technology. As for the fourth category, it is based on finer things that allow them to satisfy traditional customs and increase their self-esteem, e.g. clothing, personal care, hygiene, culture, and sports.

Although the physiological needs seem to be the most important needs to satisfy for BOP consumers, the highest increase in the share of income has been in the third category that includes technology and communication which means that the BOP consumers have replaced the physiological needs with social ones in order to increase their sense of belonging and to gain recognition.

While comparing the needs of the BOP consumers to Maslow's hierarchy of needs, Subrahmanyam and Gomez-Arias (2008) state that these consumers not only want to satisfy their physiological needs but also are seeking for the fulfillment of higher needs like self-actualization and self-esteem, which could allow better profit opportunities and increase the productivity.

b. Recognizing the BOP innovation design features

In order to lead the way to successful BOP innovations, defining the characteristics of these specific target markets is crucial. The 4P model (*Product, Price, Place, and Promotion*) has been used as a reference for designing products although according to Prahalad (2012) it is incomplete for the examination of marketing implications of dealing with the BOP markets. Another concept that gained attention is the 4 A's which is a strategy that was first brought up to light by Prahalad in order to reach the BOP. The 4 A's include *Awareness, Affordability, Accessibility and Availability*. The 4 A's model is considered as a complementary tool for the 4 P's model and one of the most key successful dimensions to address the BOP economic needs and learn more about what is required to achieve success from the BOP customer's perspective. In fact each A can be linked to one P, the only difference is that the 4 A's model focus more on the innovation characteristics. The *Accessibility* concept in this model was substituted with *Acceptability* by researchers (Anderson and Billou, 2007). The model is described below with the 4 concepts.

First, *Awareness*, which refers to the degree to which customers are adequately aware and informed about a product or a service, can be linked to *Promotion*. Building *Awareness* in the BOP markets and distributing information especially in the rural areas where customers have no access to media is a challenge for MNCs (Prahalad, 2012). Therefore rethinking the old

marketing approaches and strategies and finding innovative communication channels are required (Anderson and Billou, 2007). According to Prahalad (2012), there is no one solution that could be applied to all BOP customers therefore targeting one specific segment in this market makes more sense. With being aware of a certain product or service, both BOP consumers and producers would know about the availability, the offering and how the product or the service works. One of the means of gaining recognition is using local partners because they can give knowledge about the different form of communication (Subrahmanyam and Gomez, 2008). Seelos and Mair (2007) on the other hand do not agree with this stating that those partnerships fall very easily due to the complication the partners might face in keeping up with the organizational structure of companies and their objectives.

Second, *Affordability* consists on providing cheap goods or/and services specifically designed for people from the BOP. Setting up prices that are affordable for the impoverished could be possible by designing simple goods and using local materials (Anderson and Billou, 2007; Heierli and Katz, 2007; Pitta et al., 2008). These goods should not only be affordable but also accessible in terms of after sales and location that not only includes the seller but also the supply chain that offers the good or the service to the consumer (Heierli and Katz, 2007).

Third, according to Prahalad (2012), *Accessibility* is defined as the ability of customers belonging to remote areas to have access to goods and services. The problem with the BOP markets is that their consumers are not reachable because of their discouraged conditions especially the ones who live in the rural areas. The bad environment and the low quality of roads make it difficult to reach these customers.

Fourth, *Availability* is defined as “the extent to which customers are able to readily acquire and use a product or service” (Anderson and Billou 2007, 15). BOP customers are willing to buy a product only if this product is available in the market and they have the money for it. Therefore organizations should have services and goods that are available all of the time for those customers in order to build trust and customer loyalty.

Anderson and Billou (2007) refined the 4 A's model replacing *Accessibility* by *Acceptability*. When it comes to BOP markets, *Acceptability* is a challenge. MNCs should offer services and goods that must meet the BOP customers' specific needs. The authors state that *Acceptability* is one of the biggest issues for these low-income customers. That is why all the parties involved in the value chain should be willing to accept the good or service by allowing customers to define the value of the product or service on their own (Anderson and Billou, 2007). Therefore, creating some innovative ways to support the activities throughout the value chain is as important as providing innovative goods and services.

c. Mastering the BOP innovation principles

Prahalad states that to address the BOP markets, we should use innovation. He summarizes this view in 12 principles of BOP innovation that are important for creating innovative goods and services in the BOP markets. The BOP innovation principles are the following:

- Focus on price performance
- Innovate
- Make the solution scalable
- Aim to conserve resources
- Identify functionality
- Think in terms of process innovations
- Reduce the skills required to do the job
- Educate consumers in the use of products
- Design goods and services to operate in very tough infrastructure environments
- Make the interface simple and the learning curve short
- Innovate in distribution
- Challenge assumptions.

Many researchers have built upon these principles and have given some successful BOP innovation approaches with a big emphasis on the importance of creating new business models specific for the BOP markets that have unique conditions. (Ricart, Enright, Ghemawat, Hart, and Khanna, 2004). Providing solutions that could be adoptable with these unique conditions and that are inspired from their realities, is a key success for innovation (Simanis & Hart, 2009). The one-size-fits-all approaches or the standard approaches are not appropriate for these heterogeneous markets characterized by many variations in all levels. That is why much of the literature is relating the BOP concept to the innovation concept.

2.2.3. Case studies

In an attempt to understand the contribution of BOP innovation, this section will be dedicated to the examination of some cases studies based on different BOP innovations that proved to be successful in the BOP markets.

a. A Business model innovation case : Grameen Telecom on providing telecommunications services to the poor in rural Bangladesh

Bangladesh is the third poorest country in South Asia and one of the world's most densely populated countries. About the third of this population, live below the poverty line mostly in rural areas. Bairagi et al (2011) discuss the case of Grameen Telecom which is a non-profit telecommunications services provider that focus on the rural population of Bangladesh.

Grameen Telecom has been able to pioneer a telephone business model that provides wireless services to those poor populations creating a “phone culture” among the rural people of Bangladesh. The approach that Grameen took was based on creating micro enterprises that are able to generate revenue and allow those people to communicate instead of being obliged to travel for a long distance to do so. In the case of a Grameen Telecom, innovation was not about designing a new product nor was it about designing a new process. The success was with the business model innovation. Introducing local entrepreneurs as an intermediate between Grameen Telecom and poor people in rural Bangladesh. With this innovative approach, Grameen succeeded on providing telecommunication services in over 85,000 villages in 61 districts of the country. 75% of the operators were women whose income had increased \$300 per year allowing them to spend more money on education and health care.

b. A product innovation case : Tata Motors on building innovation capabilities through creating an original product “The Nano car” for the BOP market

With a study on a product innovation case, Lim et al (2013) discuss how a firm, like India’s car manufacturer Tata Motors from a large developing country like India with an estimated current population of 1,1 billion people, is able to build capability with innovation for the BOP markets. The Nano was designed by Tata motors, targeted at the BOPs for people who need cars but cannot afford to do so and whose income is equal to or higher than auto bike riders. What makes the Nano different from the other cheap cars is that it is a product specifically design for the BOP customers. When it comes to design, Nano is not like the other comparable cars in the market. It has a stylish design and a different architecture from the other cars. In addition, Most of the cheap cars use generally three-cylinder engines. As for Nano, it has a two-cylinder engine that was placed under the rear seat and inclined, as opposed to the front-located engine found in other cars. The innovation strategy adopted by Tata Motors, led to the creation of new product category “the ultra-cheap car” that did not exist until the appearance of Nano. This car was specifically designed for customers with a strict budget constraint so the price that was sat by Tata Motors was a starting target price of \$2500. The aim of Tata motors during their innovation process was manufacturing a cheap car originally targeted for BOP customers while providing value to these customers and meeting all safety and environment requirements. They also succeeded in creating an innovation process allowing them to overcome “the deficiency problem” in generating radically cheap priced original products (Lim et al, 2013).

With this case study of Tata Motors’ Nano, The authors emphasize also on the role of local entrepreneurs to bring positive social change within the BOP.

c. A service innovation case : M-PESA on providing mobile banking in Kenya for the unbanked Kenyan communities

Kenya, considered one of the poorest countries in the world, has a population of almost 38 million. More than the third of this population lives in urban areas. Most of the people living in those areas are not familiar with the use of electronic payments. Mobile phones have been an important tool for everyday use. They also have created opportunities for the emergence of banking services. Adoption of mobile banking in Kenya was initiated in early 2007 by Safaricom which is the leading mobile network operator in Kenya, with the launch of an m-banking application called M-PESA allowing low-income and unbanked customers to have access to financial services such as withdrawing cash, making deposits, transferring money to other users (Hughes and Lonie, 2007). Since then much has happened, this m-banking app has achieved a lot of success giving the opportunity to over 10 million customers to use the service and giving much benefits to the poor Kenyan communities with job creation and cost elimination of opening a bank account (Omwansa, 2009). The service has quickly expanded to other countries such as India, South Africa, and Afghanistan. This expansion and growth show how important mobile banking has become in the life of BOP consumers over using conservative banking methods (Doline and Solomon, 2013).

3 The bibliometric exercise on BOP and innovation: method and results

3.1. Methodological considerations: the method, article selection, and coding procedure

The objective of the present study, as mentioned earlier, is to go through the literature in order to deeply examine the research that has been published on our topic - the role of innovation in finding opportunities within the BOP markets –, aiming at filling the gaps that we previously identified.

As we mentioned in the Introduction, there is not yet a clear mapping of key publications and authors associated with the BOP innovation concept. Hence, we propose to implement a bibliometric exercise in order to:

- Outline in depth the most important findings and conclusions from the published research;
- Map the literature by main publications, authors, emerging topics and methodologies.

With this bibliometric analysis, we will be able to systematize the main contributions of this literature, by signaling the most relevant opportunities in BOP markets, and to understand the evolution of the BOP innovation through time.

In order to collect data for our investigation goal, we have chosen SCOPUS as the data source for our research. Generally, bibliometric studies use three main sources of data, which are Scopus, the ISI Web of Science (WOS), and Google Scholar (GS). Adriaanse and Rensleigh (2013) demonstrated that SCOPUS is the best performer compared to the ISI Web of Science (WOS) and Google Scholar (GS) in terms of consistency, functionality, quality of record processing, and depth of coverage. Hence, we have chosen SCOPUS to implement the Bibliometrics exercise.

Our database was obtained using the combination “BOP” OR “Base of the pyramid” as research keywords in order to increase our chances of finding relevant papers revolving around this topic. The selection procedure involved the elimination of the papers that, despite mentioning BOP, were not related with the research topic in analysis. This step is rather important because it ensures that the articles selected are focused on the BOP issue.

The search in SCOPUS was conducted on 30 January 2016 and returned 542 articles. By analyzing each abstract (in some cases, the full article) from these 542 articles, we were able to remove 269 articles from our initial database. These articles were removed since they are highly irrelevant for our research. In fact, the term BOP stands not only for “Base of the pyramid” but also for other terms such as: “Balance of payments” (economics), “Balance of

power” (politics), “Balance of poetry” (Literature and poetry), “Bureau of prisons” (Criminology), “Balance of pressure” (Physics), “Bivariate ordered probit” (Accident analysis and prevention) and some other terms related to very distinct research fields. Since the main goal of this bibliometric exercise is to analyze the evolution of the research focused on BOP, relating it to innovation, we have discarded the articles that are irrelevant for our topic and those that, despite using the concept, are focused on other research fields such as life sciences, law, and mathematics.

We have also eliminated the articles corresponding to comments, rejoinders, book reviews and corrigenda, and we have limited the search to peer reviewed published articles to ensure the quality of the gathered research papers.

After this assessment, a total of 273 articles has been selected, which were then categorized according to their main research topic and type of methodology.

In what regards the categorization procedure, which is a crucial step in the Bibliometrics exercise since it allows the identification of the most important trends in the BOP literature, we adopt the following categories based on the main research topic:

- (A) The description of BOP markets characteristics;
- (B) The outcomes of BOP initiatives and researches;
- (C) Adaptation of innovation within the BOP markets and its impact;
- (D) Business models applied within the BOP markets and their characteristics.

The gathered papers are organized not only according to the above-mentioned categories but also in terms of adopted methodologies. We propose the following main categories in line with Silva and Teixeira (2009):

- i. Formal;
- ii. Empirical;
- iii. Formal and empirical;
- iv. Appreciative;
- v. Survey.

The articles characterized as “formal” are based on an analytical or logical framework. Those that contain a statistical testing of data are classified as “empirical.” If the formal articles also contain some econometric testing, they are classified in the third category as “formal and empirical.” Those classified under the fourth category, “appreciative,” generally include either appreciations or judgments, or involve some theoretical arguments without formalization. As for the fifth category, it included articles that correspond to reviews of other works.

3.2. The bibliometric exercise: main results

We provide an analysis of the 273 articles by the following perspectives: evolution of publications by date, the most influencing researchers in the field, the most important themes, the different methodologies, and the quality of this research field based on the distribution of articles by journal ranking categories and the importance of innovation in the BOP research.

3.2.1. Evolution of the BOP research

a. Chronology of the BOP research

It is important to know the chronology of these articles, not only to understand the evolution of the BOP concept throughout the years but also to relate this concept to innovation. The chronology of the articles studying the BOP concept is depicted in Figure 3.

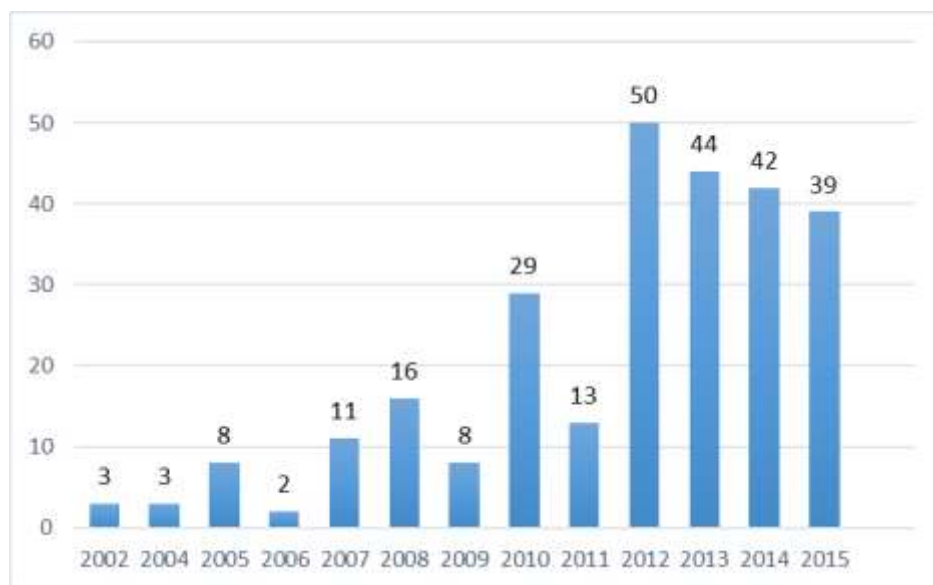


Figure 3 - Number of BOP articles per year

From Figure 3, we can notice that although the publications are not many (3), the BOP concept started to gain attention by scholars in 2002. As we have seen in Chapter 2, professors Prahalad and Hart first introduced this concept in 1999 who had first identified the dimensions of the BOP concept. According to these authors, governments, business makers, and anti-poverty organizations should stop seeing the poor as victims but rather as creative entrepreneurs who can not only respond to their own needs but also make a difference in their communities. In 2007, the BOP concept started to have a real impact between researchers since the number of articles started increasing significantly. A peak was reached in 2012, with 50 published papers and it has not increased much since then.

b. Distribution of articles throughout the years according to the main theme

During the past years, several articles have been published in the field of BOP. These papers, as above mentioned, have been revolving around 4 themes:

- (A) The description of BOP markets characteristics;
- (B) The outcomes of BOP initiatives and researches;
- (C) Adaptation of innovation within the BOP markets and its impact;
- (D) Business models applied within the BOP markets and their characteristics.

While classifying these papers, we have noticed that most of them may be classified in more than one category (see Figure 4). 34% of the papers focus on theme B and are devoted to studying and/or criticizing the outcomes of BOP initiatives. Whereas 16% cover at the same time both B and D, describing the business models applied in the BOP markets and their characteristics. The remaining categories, particularly A, C and D have roughly the same weight (5% for the “The description of BOP markets characteristics”, 5% for “Adaptation of innovation within the BOP markets and its impact” and 6% for “Business models applied within the BOP markets and their characteristics”). As for the remaining 25%, they were classified under a category that we named “others”. This category contains mainly papers revolving around all the main categories at the same time or focused on analysing other related topics to the BOPs but in a general way.

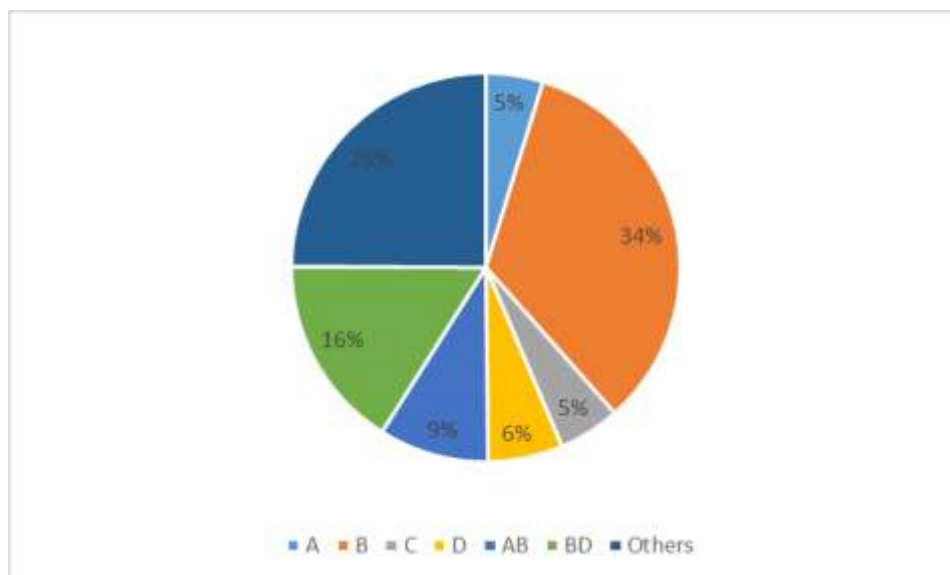


Figure 4 - Distribution of articles according the main theme

Looking at our database, we can find a number of papers, classified under the first category A, that have played a major role in the BOP field. Some of these studies are general analysis studying these markets as a whole and setting up characteristics that would apply to all BOP markets in the world. Among these studies we cite “The fortune at the bottom of the pyramid” by Prahalad and Hart. The authors demonstrate that the 4 billion people belonging to the BOP, represent a great opportunity for MNCs (Prahalad and Hart, 2002). The paper presents not only a description of those markets and their customers but also what the authors call the four dimensions of the commercial infrastructure and which are the following:

1. Increasing purchasing power,
2. Improving the distribution system,
3. Reforming local options and,
4. Improving culture of the consumers.

Prahalad and Hart (2002) argue that taking those dimensions into account would make any marketing strategy at the BOP successful.

Some other papers study the characteristics of the BOP but with a focus on illustrating the differences and variations that exist across the BOP populations. Among the characteristics of the BOP that are highlighted in the literature is the power buying index (henceforth referred to as BPI). Guesalaga and Marshall (2008) state that the customers belonging to the BOP are characterized with an annual income of US\$3,000 or less. The two researchers consider that the computation of the BPI is a key indicator of purchasing power. They find that “*In developing countries, more than 50 percent of the purchasing power resides in the BOP segment. Asia is the region with the greatest purchasing power, relative to Africa, Eastern Europe, and Latin America and Caribbean.*” (Guesalaga and Marshall, 2008, p.412).

Ireland (2008) whose paper is classified under both categories A and B, argues that there should be a differentiation between urban areas and rural ones when describing the characteristics of the BOP. The author states that the spending on consumer’s goods in all the Indian rural BOP community is between 5 and 10 times lower than that in the shantytowns of the three largest cities in Venezuela.

The results of the review of most articles classified under category A, even when belonging to another category at the same time, show that most researchers, when describing the BOP characteristics, take into consideration some important elements such as the poverty level

(relative, moderate, extreme), the type of market (rural, urban), the connection of those markets to the other markets, the degree of illiteracy and the awareness of the customers.

Most of the articles classified under the second category B are based on case studies in very poor countries such as Niger, India, Kenya, South Africa and Bangladesh. These papers address issues related to the people belonging to these markets like unemployment and poverty. Some are in less poor countries like Iran and Indonesia, and some other are in some of the poor regions in developed countries.

Among the recent studies analysing the impact of BOP initiatives, Ghareche et al. (2015), with a case study from Iran, has findings that contribute not only for the improvement of life conditions of BOP individuals but also for the creation of healthy rivalry among active enterprises. Proposing both a conceptual and operational model, the authors have demonstrated the importance of e-marketing tools on awareness-raising and empowerment of the BOP where consumers have little incomes, live in areas with poor infrastructure and do not have access to conventional sales points such as supermarkets. These situations make marketing and distribution really challenging.

In another recent study, Abo (2015) compares the Japanese management and production system with other management systems, discussing the relationship between technology transfer and the creation of competitive advantages at the BOP in 30 developing countries.

Another interesting case study provided by our data base is a study by Wulandari and Kassim (2015). This study is about the Islamic marketing in BOP markets in Indonesia. The main objective of this paper is the analysis of service quality and its impact on customer satisfaction among the Islamic pawnshop borrowers in Indonesia. The two authors conducted a survey in several areas of Indonesia using descriptive and regression analysis to find the relationship between customer satisfaction and service quality demonstrating that responsiveness has the highest impact for customer satisfaction.

c. Distribution of articles throughout the years according the methodology

Regarding the methodology, we can see in Figure 4 that most of the articles are formal with a share of 44%, and 28% are empirical. The articles that employ both formal and empirical methods and articles that employ an appreciative methodology have a similar share (14% for the formal and empirical and 12% for the appreciative). Only 2% correspond to surveys.

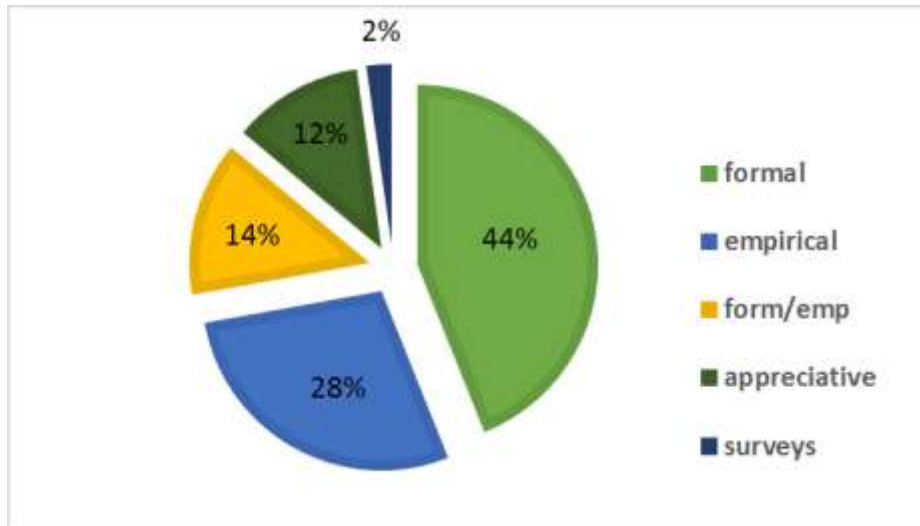


Figure 5 - Articles' distribution according to the methodology

In Figure 5 we depict the evolution of BOP papers between 2002 and 2015 based on their methodology. The percentage of articles that can be considered as formal and that normally contain examples as illustrations but without empirical tests rise above the percentage of empirical articles that normally contain empirical tests either quantitative or qualitative. Most of those empirical articles are mainly based on case studies mostly relying on small- sample data which demonstrates how hard it is to collect large-sample data for BOP research

The year-by-year investigation that we present in Figure 6 below, demonstrates although most of the research on the BOP concept is mainly formal, we can see that a variety of methodologies found in BOP articles has augmented since the year 2008.

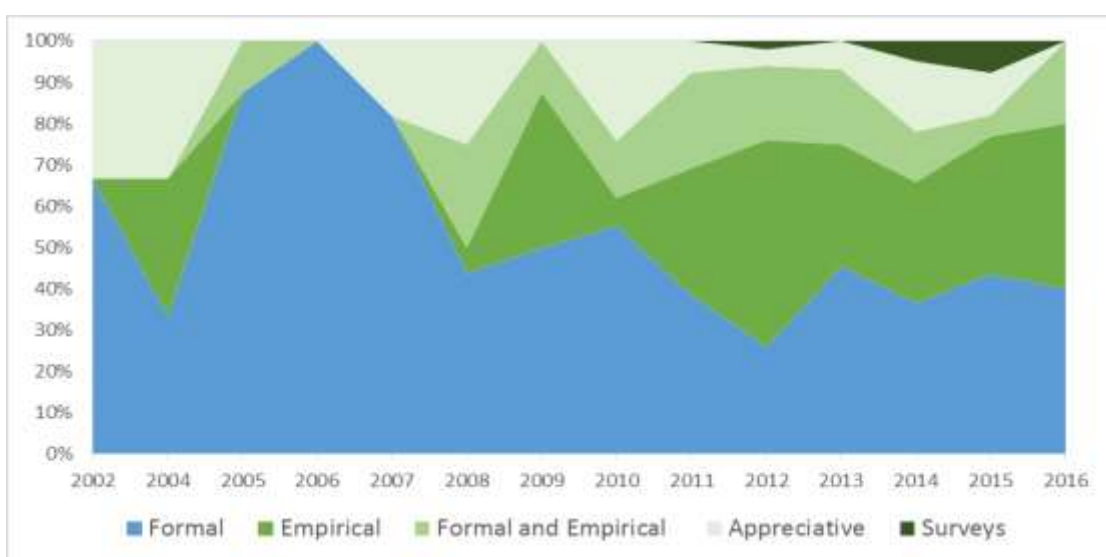


Figure 6 - Articles distribution based on the methodology 2002-2015

d. Distribution of BOP articles in journals

The table presented below in Figure 7, contains the journals in which more than 4 BOP articles were published. Journals are classified by the SCImago journal rank indicator (SJR)¹ and we present the number of publications per journal. Generally, the major indicator of the scientific importance of journals is the impact factor IF, which is calculated annually by the Institute for Scientific Information (ISI). By definition, in any given year, (IF)² is the ratio between the number of articles cited in the two previous years and all citable documents published in the same period of time (Garfield, 2006; Falagas et al., 2008). There are other indicators of the scientific relevance of journals, for example the Source Normalized Impact per Paper (SNIP). This indicator measures contextual citation impact by weighting citations based on the total number of citations in a subject field.

Concerning the rankings of journals, there are also several options, for example the one provided by the Tinbergen Institute.³ We have chosen SJR because most of the journals publishing BOP-related papers are absent from the other proposals.

Name	Nr. publications	SJR*
Journal of Consumer Marketing	12	0,601
Journal of Business Research	10	1,183
Greener Management International	9	0,115
Field Actions Science Report	7	0,103
International Journal of Business and Globalisation	7	0,150
Journal of Business Ethics	6	1,110
Technovation	6	1,418
Journal of Product Innovation Management	5	1,975
International Business Review	4	1,166
International Journal of Rural Management	4	0,148
Journal of Management Studies	4	4,047
Marketing Intelligence and Planning	4	0,351
Marketing Theory	4	1,413
Revue Francaise de Gestion	4	0,195

Figure 7 - Main journals in terms of number of publications and ranking

¹ SJR is an index based on SCOPUS database which has much wider indexed journals compared to IF <http://www.scimagojr.com/index.php>

² IF is the impact factor which is the major indicator of the scientific importance of journals (Falagas et al., 2008)

³ <http://www.tinbergen.nl/research/ranking2.html>

e. Main authors in the field

As previously mentioned, the term BOP had been first introduced by Prahalad and Hart in 1999 with the aim of raising awareness of the poorest socio-economic group and the need of exploring the markets belonging to this vast and untapped segment. The BOP concept was not only presented as a new strategically important concept for MNCs to explore new markets but also from a poverty alleviation perspective. Since then not so many articles were interested in studying and further exploring this concept until 2002 when it was revived by Prahalad and Hammond.

When examining our database we observe that one the most prominent authors in this field aside from Prahalad, Hart and Hammond is Chikweche with 8 papers that were mostly revolving around marketing strategies at the BOPs and the importance of the use of the customer relationship management (henceforth referred to as CRM) at the BOP markets. Papers that were written by Chikweche, have a major focus on the BOP markets in Africa and more specifically on Zimbabwe. 6 papers of this author are co-authored by Fletcher from the University of Western Sydney and published between 2011 and 2013. Goyal and Sergi have 5 papers: 3 published in 2015, mainly studying different aspects of social entrepreneurship activities like their social impact in creating value in the BOP markets and the challenges and strategic choices required to build inclusive business models at the BOPs; 2 published in 2014: one studying the impact of three different business models in providing affordable energy solutions for the underserved poor population in rural India and the second built on understanding the key characteristics of social business models to achieve the socio-economic success at BOP. Also within the specific field of social entrepreneurship, (Kistruck et al., 2010) is focused on the entrepreneurial process at the BOPs. Kistruck and his co-authors analyse the role of the interactions between entrepreneurs and technical experts in improving the performance of entrepreneurial activities at the BOPs, also focusing the role of interactions between entrepreneurs themselves in adding value to the life of the impoverished (Sutter et al,2014).

Karnani, Dolan, Kistruck and Viswanathan have 4 articles each. Karnani, as we stated before, was interested in the role played by the private sector in eradicating poverty by focusing on the poor as producers rather than as consumers. The author proposes private companies to view the poor as producers, and emphasizes the idea of buying from them rather than selling to them (Karnani, 2007, 2012). He also co-authored in 2015 a paper with Clyde, studying as well the social impacts of the private sector in poverty alleviation at the BOPs (Clyde and Karnani , 2015).

Dolan and co-authors were mostly interested in studying the BOP initiatives in Africa and Asia, mainly in countries like South Africa and Bangladesh (Dolan and Johnstone-Louis, 2011; Dolan et al., 2012; Dolan, 2012; Dolan and Roll, 2013).

3.2.2. Innovation in the BOP literature

The work on innovation within the BOP has increased significantly in the past decade. The number of scholars and publications interested in this matter has been increasingly growing. From the 273 articles that have been selected for our BOP research, 70 focus on BOP innovation.

a. Number of publications

The evolution of the publications, whose main theme is revolving around innovation, is described in Figure 8 below. In 2010, innovation started to gain more and more attention by scholars who were mostly focused on understanding how entrepreneurial efforts could make positive changes in the BOP communities through innovation. Some of those studies were wide-ranging (e.g.; Ahlstrom, 2010) and others were more specific, being focused on case studies especially in countries like India (e.g.; Sharma, 2010; Ray and Ray, 2010) and other countries in Latin America like Nicaragua (e.g.; Hunt et al., 2010) and Brazil (e.g.; Chelekis and Mudambi, 2010). Some of 2010 papers were also exploring different business models innovation (both isolated and interactive ones) and the factors leading to their success (e.g.; Sánchez and Ricart, 2010). The main findings of these papers will be studied in depth in the next section.

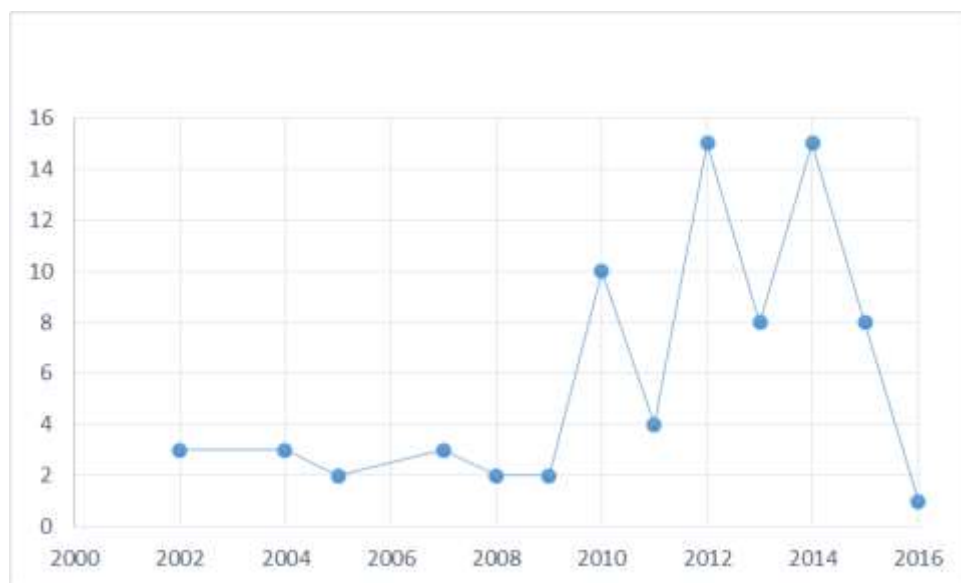


Figure 8: Evolution of innovation BOP related articles

b. Evolution of main findings and topics

The analysis of the BOP articles revolving around innovation shows that most of them have been exploring successful cases emphasizing on the role that MNCs can play in empowering the poor communities and in making innovative projects with a positive impact on the BOP markets. These studies have also been focused on drawing some useful frameworks for MNCs in order to help them to explore those markets, find opportunities and or adopt new strategies with a major focus on the necessity to innovate and the need for innovation. A fewer number of publications portray the role played by public institutions, governments, non-profit organizations and small and medium enterprises in poverty alleviation in the BOP regions using innovation.

Studying in depth the findings on the innovation-related papers found in the literature, we can see that most of them are built on case studies. Those case studies are mostly based on identifying the needs of BOP customers as a starting point for BOP innovations, and building innovative products in order to adopt more effective approaches to serve the unmet needs of the BOP communities.

❖ Pursuit of disruptive innovation by MNCs

From the 70 innovation related papers, found on our data base, 23 describe the BOPs as a source of disruptive innovation for MNCs, proposing some innovative approach to operate in these markets.

Hart and Christensen (2002), Prahalad (2004) and Ahlstrom (2010) have emphasized the potential of goods that are specifically made to answer to the specific needs of BOP customers. Hart and Christensen (2002) state that such products should be considered as disruptive innovations because these either create completely new markets by reaching out to the low-income customer segments that were non-consumers before by offering an affordable price for instance, or adopt a new low-cost business model. They also demonstrate that BOP markets can be the potential new markets for MNCs to successfully apply disruptive innovations (Hart and Christensen, 2002). Note that Christensen (1999) defines disruptive innovation as the innovation that gives the opportunity to an entire new population of BOP customers to have access to a good or service that was historically limited to rich customers or highly skilled customers.

This research shows the importance of developing technology products while focusing on the needs of the poor. The authors suggest that MNCs can grow and satisfy at the same time social and environmental impacts through what they call a "great leap" to BOP. Stating that innovation can be realized if the technologies that are needed to address both environmental and social challenges linked to economic growth are developed, the authors strengthen their point by giving examples of companies that are already profitably disrupting in different fields such as energy, telecommunications and electronics (Hart and Christensen, 2002).

One of the most interesting case studies based on an example of successful disruptive innovation is the case of 'Tata Motors' Nano (Lim et al., 2013). This example was already addressed in the literature review and, while revising the findings from our data base, we came across many in-depth studies that have explored this particular case of product innovation for the BOP markets and its capability to meet the challenging affordability and acceptability demands of the impoverished customers at the BOPs.

Lim et al. (2013) show, through studying the example of this Indian product, considered a revolutionary product in the automobile industry, how innovation capabilities can be built for the BOPs. They argue that the achievement of an innovation capability is strongly linked to the creation of a process that could overcome what they call "the deficiency problem" in creating or introducing radical innovation products satisfying the unique price performance

requirements claimed by BOP customers. Drawing on Christensen's work and the definition of disruptive innovation stated in his book "The innovator's dilemma", Ray and Ray (2011) show that the success of Tata with the Nano was achieved thanks to the joint effort of both designers and suppliers for component design, and the way they were early integrated in the design phase which helped to reduce the costs while including features valued by big markets.

Tasavori et al. (2015) provide a guide for MNCs in creating opportunities in the BOP markets. Their research was conducted in India since it has an extensive BOP population and is considered as one of the most attractive markets for MNCs. 8 MNCs and 5 non-governmental organizations (henceforth referred to as NGOs) were selected for this research. The chosen companies are from different types of industries serving a variety of BOP markets.

One of the most powerful studies in the BOP literature is a study by London and Hart, published in 2004 in *The Journal of International Business Studies*. London, well known by his impressive work on the BOP issues, and Hart give some useful insights about how MNCs can pursue opportunities at the BOP: helping them to explore the emerging markets (henceforth referred to as EM) in the developing countries, and to identify the most successful strategies that could be applied within those low income markets. In this exploratory study that also involved interviews with some MNCs managers, the authors argue that in order to achieve profit and contribute to poverty alleviation, MNCs need to create new business models and new products that could be specifically adapted to the BOP markets (London and Hart, 2004).

❖ **The impact of social innovation and entrepreneurial activities in the BOPs**

Other cases focus more on innovations from an entrepreneurial perspective such as social innovation and social entrepreneurship.

16 papers were dedicated to study BOP innovation from an entrepreneurial angle. The findings derived from those papers contained some descriptions of dedicated entrepreneurs who have succeeded to create profitable businesses for BOP markets combining both social returns and financial profits. Entrepreneurship has always been perceived as a mechanism to eliminate poverty.

Through the examination of a case of an entrepreneurial venture in the medical technology sector, Harjula (2005) analyses in depth how indecisive the entrepreneur is when trying to apply innovative BOP strategies, between focusing on proving social impacts to the BOP communities and achieving financial success for the venture. The author argues that using an

increased volume target automatically contributes to both making profits, and raising and achieving social goals. Prasad and Ganvir (2005) discusses the principles of innovation while examining a case of a successful entrepreneurship model which has given benefits the development of a rural domestic water filter in India for both the rural consumer and the rural entrepreneur.

Some papers have given more attention to the significance of entrepreneurship activities in the BOPs (Bruton and Ahlstrom, 2015; Goyal and Sergi, 2015; Prahalad and Hammond, 2002; Rashid, 2014). Other fewer have focused on studying some microfinance models operating at the BOPs, linking the economic goals of microfinance institutions (henceforth referred to as MFIs) with their social responsibilities (e.g., Casselman and Sama, 2013; Chakrabarty and Bass, 2013; Viswanathan et al., 2009). It has been proved that microfinance has helped both socially and economically the development of BOPs, giving benefits not only to borrowers but also to MFIs. Some researchers have been studying the impacts of giving microcredit to BOP customers who are generally financially excluded, investigating topics such as attitudes of vulnerable segments such as war-affected regions and their behaviour towards obtaining microcredit in BOP markets and the implications of these microcredits for those disadvantaged customers (e.g., Jebarajakirthy and Lobo, 2015; Jebarajakirthy et al., 2015).

❖ **Diffusion of innovations at the BOPs**

10 papers have been focused on exploring strategic innovation at the BOP markets (e.g., Anderson and Markides, 2007) .

Strategic innovation is based on innovating the strategy itself. Strategic innovation for the BOPs is associated with the following three questions: (a) who are these target customers belonging to BOP markets? (b) What kind of goods or services to provide to those customers with specific needs? And (c) How to deliver these goods or services to those customers in a cost-efficient way? Anderson and Markides (2007) state that those questions help to explore such innovation in a more detailed way. Using examples of case studies from India, China, Brazil and the Philippines from different fields, the authors demonstrate how companies can create value for the BOPs building innovative strategies based on the four A's (affordability, acceptability, availability and awareness).

Scholars in the BOP innovation field argue that innovation can be achieved only if MNCs rethink their business models. They advise companies to build up new marketing and distribution strategies. More recently, through conceptual frameworks and theoretical models and qualitative case studies, scholars have expanded the theory of the diffusion of innovation

linking it to the BOP concept. The use of the diffusion theory on the BOP markets is mostly narrative and builds on specific successful cases applying such theory. Analysing the BOP concept from an innovation perspective, some papers suggest that the BOP innovation is strongly linked to the diffusion of these innovations (Rabino, 2015; Ratcliff and Doshi, 2016; Waeyenberg and Hens, 2008).

Rabino (2015) provides MNCs with a good action plan that might help them to find great opportunities in the BOP markets while describing the linkage between three main concepts: BOP, the innovation process and the diffusion of innovation.

Based on a case study from the automobile industry (the Tata Nano), Waeyenberg and Hens (2008) use the diffusion innovations theory aiming to examine what the companies should change about their marketing strategies when launching an innovative product for the BOP customers.

A very recent study by Ratcliff and Doshi (2016) analyses the diffusion of innovations using the Bass model, which is a model that was developed by Frank Bass and consists of a simple differential equation that describes the process of how new products get adopted in a population. The model presents a rationale of how current adopters and potential adopters of a new product interact. The basic premise of the model is that adopters can be classified as innovators or as imitators, and the speed and timing of adoption depends on their degree of innovativeness and the degree of imitation among adopters. This research shows that this Bass Model can be useful in providing news tools to understand the uptake of BOP innovations.

Also within the issue of the innovation diffusion in BOP, Silvestre and Neto (2014) state that BOP markets present some barriers that might make the process of innovation diffusion in BOP clusters more difficult when compared to other clusters. Some of the barriers identified by the scholars are: entrepreneurial short-term mind-set, large number of terms and informalities and much pressures put on the BOP entrepreneurs.

❖ **Corporate social responsibility and innovation for developing BOP markets**

A few number of articles focus on corporate social responsibility (henceforth referred to as CSR) or ethical issues. 6 papers have developed theoretical or empirical linkages between corporate social responsibility (CSR) practices and innovation at the BOP, with the objective of analysing the influence of CSR practices on innovation for the poor communities.

Most authors stand with Prahalad's proposition stating that MNCS can bring both the social goals for the BOP and their business goals of achieving profit, arguing that MNCs must apply principles of corporate responsibility to their goods, services and innovation processes to

achieve market development at the BOP (e.g.; Arnold and Valentin, 2013; Oodith and Parumasur, 2013; Singh et al., 2015).

By using a case study methodology, Dolan and Johnstone-Louis (2012), analyse how a CSR project like Avon which has been creating value for the BOP women in South Africa and uplifting them as entrepreneurs, can both combine its growth with moral imperative giving to these women the opportunity to be included in the commercial mainstream.

Aiming for a better understanding of the phenomenon of building strategies against poverty Pestre (2010) describes the different phases of development of a CSR/BOP strategy of the French leader in the food, Danone which is one of the companies that are considered pioneers in sustainable development and CSR, and which has been the subject of several cases of research from an innovation perspective.

Ramani and Mukherjee (2014) state that generating CSR gains is an outcome of serving the BOP customers through innovation. The two researchers examine two innovation case studies from India, one based on a genetically modified cotton seed and the other based on a HIV/AIDS drugs cocktail. Those two case studies show that even though firms don't apply innovation to achieve CSR returns and don't evaluate the CSR potential of an innovation while making their investment decisions, they could still be able to generate CSR returns. Therefore, recognition of the CSR potential of an innovation can provide high achievements to firms (Ramani and Mukherjee, 2014).

❖ **Business models innovation at the BOPs**

Our database contains 15 articles whose goal is to expand both the business model innovation literature and the BOP literature, offering better insights about business models in the BOP and helping firms to succeed in their business in the BOPs. Examining some of the findings from the most important papers throughout the years, we can notice that successful business model case studies are still few due to the insufficiency of innovation (Hwang and Christensen, 2008) and the absence of a “bottom-up approach” (Viswanathan and Sridharan, 2009).

Although business model innovation was studied from different perspectives like, for instance, its sources, types of business model innovation, obstacles to innovation and company performance, the large majority of the examples provided in the papers from our data base support the idea that traditional business models could not be applicable in the BOPs and call for the adoption of new ones (Chesbrough, 2003; Morris et al., 2005; Pels and Kidd, 2015). Most of the papers revolving around business models innovation were published in 2015.

Studying the case of an Argentine social business that offers high-quality medical healthcare to BOP customers, Pels and Kidd (2015) compare the innovative business model adopted by them with both the traditional public and private healthcare models. The authors argue that social and economic goals in the BOPs could only be achieved if the firms would adopt a bottom-up approach in order to find out which components of their business model should be modified.

Reynoso et al. (2015) provide a comprehensive view of solution-based business models and their relevance for inclusive service innovation, emphasising the role of culture and technology. Giving useful principles and illustrations drawn from the experiences of some low income countries such as India, Latin America, and China, the authors contribute for a better understanding of the importance of adopting solution orientation as a successful business model to gain the attention and the engagement of BOP customers, despite the difficult business climate. This study suggests letting go of the strategy based on selling services and adopting an innovative strategy that involves BOP customers as active resources to co-create social and business value. This study aims to target practitioners in emerging economies who could use the suggested approach to build sustainable business cultures and improve the well-being and conditions of the BOP markets.

George et al. (2015) present an in depth case study of the GVK Emergency Management and Research Institute (henceforth referred to as EMRI) which is an Indian public-private partnership (henceforth referred to as PPP), emphasising the role of open innovation and innovative business models in improving healthcare services and in connecting the large BOP segment with health. Building up an innovative business model which has inputs from multiple actors, EMRI is a successful example of adopting open business models in impoverished communities. The researchers also examine how PPPs that use open innovation rules are the best in delivering services to the BOP communities.

4 Conclusion

The main goal of this research, as we previously said, was to map the main articles about BOP innovation.

We used as methodology a bibliometric analysis that has helped us to systematize the main contributions of the literature by signaling the most relevant opportunities in BOP markets, and to understand the evolution of the concept of BOP innovation through time.

The results that we have obtained and analyzed through our bibliometric exercise are retrieved from a data base that contained 273 articles published between 2002 and early 2016. From this total 70 articles were BOP innovation related.

In this dissertation, namely with the implementation of this bibliometric exercise, we were able to construct the mapping of the literature from a quantitative perspective of the literature in several dimensions: main publications, main authors in the field, emerging topics and methodologies, and also from a qualitative perspective based on the analysis of these dimensions.

The findings gathered from our data base revolve around a wide range of topics related to the BOP concept in general and to BOP innovation in particular, mainly analyzing the characteristics of BOPs across the countries and the evolution of this concept throughout the years. The earlier studies mostly discuss how to define the BOPs as a whole, and study the variations of BOP markets across the countries and in different contexts. These studies aim at drawing a clearer picture of what has been done for these special and demanding markets.

The 70 BOP innovation related articles were mainly focused on: the pursuit of disruptive innovation by MNCs, the impact of social innovation and entrepreneurial activities in the BOPs, the diffusion of innovations at the BOPs, corporate social responsibility and innovation for developing BOP markets, and business models innovation at the BOPs. The empirical examples presented in our data base show the innovative BOP approaches and strategies are done not only by MNCs but also include entrepreneurial activities by social enterprises and NGOs whose main objective is to work toward poverty alleviation in an economically feasible way. These results call for a better understanding of the role that social entrepreneurs and innovation can play in improving the BOPs conditions through a variety of types of innovations. Most of researchers call for future research stating that in order to generalize the findings, diverse case studies are needed since the conditions at the BOP may affect a variety

of business activities differently and encourage for the collection of larger samples for the empirical studies.

Some of the cases studies include diverse tools and study different concepts related to BOP innovation such as hybrid business models, corporate responsibility, and technological innovations like disruptive innovations, open innovations etc. Our review and the analysis done in our bibliometric exercise show also that there are various successful business models adopted at the BOPs as a result of different BOP initiatives. However, since there are many variations in the BOPs from different perspectives such as customers' needs, type of good or service, environment, type of market, country, and industry, they are not appropriate for all contexts. Due to these variations, we call for a deeper study preferably built on the previous ones.

Like any research, this dissertation has limitations. The most relevant corresponds to the obvious constrain associated with any bibliometric exercise: the possibility that some influential articles may be absent from the analysis due to the fact that the extracted data base does not include them. In a future work we would like to use the gathered findings to provide a deeper analysis on the subject. A potential research line will be analyzing possible networking research within the field, so as to further investigate the main scientific contributions in the literature on BOP markets and innovation.

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